

Virtual Battlegrounds: Direct Participation in Cyber Warfare

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Abstract: This paper looks at the question of direct participation in cyber hostilities under the international law of armed conflict, or international humanitarian law (IHL) as it is also known. The paper examines the history and development of the concept of direct participation in hostilities by civilians, which serves as an exception to the principle of civilian or non-combatant immunity. In charting the development of the concept, this paper looks at landmark attempts to legally define the concept of direct participation, including the Israeli *Targeted Killings* case, and the International Committee of the Red Cross (ICRC) study into direct participation. Using this legal background, this paper then analogises direct participation in the context of cyber hostilities, and critically examines the ways in which civilians may be deemed to be directly participating in cyber hostilities. The paper also posits some solutions to potentially problematic situations raised by civilian participation in cyber warfare.

Keywords: international humanitarian law, direct participation in hostilities, cyber warfare.

I. INTRODUCTION

Cyber warfare has been the focus of considerable attention recently, due largely to highly publicized cyber-attacks against Georgia,¹ Estonia,² and Iran.³ Academics and practitioners have

¹ See Stephen Korns and Joshua Kastenber, "Georgia's Cyber Left Hook," 38 *Parameters* 60 (2008-2009).

analyzed and dissected the concept of cyber war, delving into the myriad of international law issues raised by the practice—both actual and hypothetical—of cyber warfare. Areas covered include the law on the use of force and self-defense;⁴ State responsibility;⁵ questions of attribution;⁶ and problems of distinction, proportionality and targeting.⁷ One particularly vexing issue is that of direct participation in cyber hostilities—when can one be considered as participating in cyber hostilities?

The law regarding direct participation in hostilities (DPH) has also been subject to considerable analysis in recent years, due to work undertaken by the International Committee of the Red Cross (ICRC), and case law from domestic and international courts. Determining direct participation in “conventional” hostilities is complex; determining direct participation in cyber-hostilities is especially so. Is the person who inputs the malicious code taking direct part? The person who writes, but does not execute the code? The person who gives the order for the code to be written in the first place? This paper will look at the question of direct participation in cyber hostilities, and examine the complexities regarding when an individual may be considered as taking direct part in hostilities. The concept of DPH is

² Ian Traynor, “Russia Accused of Unleashing Cyberwar to Disable Estonia,” *The Guardian*, 17 May 2007, <http://www.guardian.co.uk/world/2007/may/17/topstories3.russia>; Joshua Davis, “Hackers Take Down the Most Wired Country in Europe,” *Wired*, 21 August 2007 http://www.wired.com/politics/security/magazine/15-09/ff_estonia.

³ John Markoff, “A Silent Attack, But Not a Subtle One,” *The New York Times*, 26 September 2010, <http://www.nytimes.com/2010/09/27/technology/27virus.html>.

⁴ Matthew Hoisington, “Cyberwarfare and the Use of Force Giving Rise to the Right of Self-Defence,” 32 *BC Int’l & Comp L Rev* 439 (2009).

⁵ Nikhil D’Souza, *Cyber Warfare and State Responsibility: Developments in International Law* (16 May 2011), <http://ssrn.com/abstract=1842984> or doi:10.2139/ssrn.1842984, accessed 3 January 2012.

⁶ Jeffrey Hunker, Bob Hutchinson, and Jonathan Margulies, *Role and Challenges for Sufficient Cyber-Attack Attribution*, White Paper, Institute for Information Infrastructure Protection, Dartmouth College, 2008, <http://www.thei3p.org/docs/publications/whitepaper-attribution.pdf>.

⁷ See Ruth Wedgwood, “Proportionality, Cyberwar and the Law of War,” 76 *Int’l L Stud* 219 (2000); James Terry, “The Lawfulness of Attacking Computer Networks in Armed Conflict and in Self-Defence in Periods Short of Armed Conflict: What are the Targeting Constraints?,” 169 *Mil L Rev* 70 (2001); Jeffrey T.G. Kelsey, “Hacking into International Law: The Principles of Distinction and Neutrality in the Age of Cyber Warfare,” 106 *Mich L Rev* 1427 (2008).

multifaceted, both in and of itself, and due to its interconnectedness to a number of other concepts in the law of armed conflict. These include definitional issues regarding combatants and civilians, along with the law regarding military objectives, targeting, and the principle of distinction—concepts all worthy of their own separate analyses. To address them in any detail is beyond the scope of this paper, so this paper will focus solely on the concept of DPH.

The first part of this paper will examine the historical development of the concept of direct participation. The second part will analyze how DPH has been interpreted in law and in practice, incorporating the recent publication by the ICRC⁸ of their Interpretive Guidance on Direct Participation in Hostilities. The third part of this paper will examine what direct participation in cyber hostilities might entail by exploring some theoretical scenarios and suggesting some solutions to the complicated question of DPH and cyber war.

II. DIRECT PARTICIPATION UNDER INTERNATIONAL HUMANITARIAN LAW

The term “direct participation in hostilities” refers to the notion that, as a general rule, civilians are not to be made the target of attacks, unless and for such time as they directly participate in hostilities. This is also known as the rule on non-combatant immunity.⁹ Direct participation acts as an exemption to the principle of civilian immunity. Direct participation is an idea that developed from the writings of some of the earliest publicists of international law,¹⁰ and was an integral part of the discourse relating to the law of armed conflicts throughout the nineteenth century. The concept can be seen in the writings of publicists¹¹ and in documents like the Lieber

⁸ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, Adopted by the Assembly of the International Committee of the Red Cross on 26 February 2009, published in 90 *IRRC* 991 (2008) (hereinafter DPHIG).

⁹ For an overview of the principle of non-combatant immunity, see Judith Gardam, *Non-Combatant Immunity in International Law* (Martinus Nijhoff 1993).

¹⁰ Grotius argued that, “by the law of war armed men and those who offer resistance are killed . . . [it] is right that in war those who have taken up arms should pay the penalty, but that the guiltless should not be injured.” Hugo Grotius, *The Law of War and Peace*, Book III, Chapter III, Section IX, in L. Friedman (ed.) *The Law of War: A Documentary History* (Random House 1972).

Code, adopted by the U.S. Union Army during the American Civil War.¹²

In the earliest attempts to codify the laws of war, non-combatant immunity was central. For instance, Article 1 of the Oxford Manual of the Laws of War, a non-binding document that sought to codify “the accepted ideas of our age so far as this has appeared allowable and practicable,”¹³ states that “the state of war does not admit of acts of violence, save between the armed forces of belligerent States. Persons not forming part of a belligerent armed force should abstain from such acts.”¹⁴ While the next major iteration of the laws of war—this time in binding treaty form as the Hague Regulations¹⁵—did *not* include explicit reference to the idea of non-combatant immunity, nor to the idea of direct participation in hostilities, the literature of the time continued to affirm the principle. As Risley wrote in 1897, non-belligerent subjects of a party to the conflict:

are not liable to be killed or taken as prisoners of war as long as they do not actively engage in hostilities [C]ombatants must be open enemies, known and knowable, and non-combatants must be harmless. As soon as an individual ceases to be harmless, he ceases

¹¹ As argued in Wheaton’s *Elements of International Law*: “[no] use of force against an enemy is lawful, unless it is necessary to accomplish the purposes of war. The custom of civilised nations, founded upon this principle, has therefore exempted . . . [all] public or private individuals engaged in the ordinary civil pursuits of life, from the direct effect of military operations, unless actually taken in arms, or guilty of some misconduct in violation of the usages of war, by which they forfeit their immunity.” Henry Wheaton, *Elements of International Law*, ed. Richard Dana, (Oxford 1936), § 345 at 362.

¹² *Instructions for the Government of Armies of the U.S. in the Field, General Orders, 24 April 1863; promulgated as General Orders No. 100* (hereinafter Lieber Code); reprinted in D. Schindler and J. Toman (eds.), *The Laws of Armed Conflicts : A Collection of Conventions, Resolutions, and Other Documents*, 4th ed. (Martinus Nijhoff, 2004). Article 22 of the Lieber Code stated that “the principle has been more and more acknowledged that the unarmed citizen is to be spared in person, property, and honour as much as the exigencies of war will admit”; this provision was to be read in light of Article 15, which stated that, “Military necessity admits of all direct destruction of life or limb of armed enemies.”

¹³ Preamble, Oxford Manual on the Laws of War, reprinted in D. Schindler and J. Toman (eds.), *The Laws of Armed Conflicts* at 29-41.

¹⁴ Article 1, Oxford Manual on the Laws of War.

¹⁵ Hague Convention IV Respecting the Laws and Customs of War on Land 1907, 205 *CTS* 227.

to be a non-combatant, and must be reckoned a combatant; and unless he bears the distinguishing marks of an open combatant, he puts himself outside the laws of war.¹⁶

Non-combatant immunity, and the exception of DPH, remained at the forefront of the law throughout the twentieth century. The 1949 Geneva Conventions¹⁷ excluded explicit reference to the idea of “direct participation in hostilities,”¹⁸ but efforts towards reaffirming the principles behind DPH continued. In 1956, the ICRC issued Draft Rules for the Limitation of the Dangers Incurred by the Civilian Population in Time of War, which noted that civilians should be “outside the sphere of armed attacks,”¹⁹ defining the civilian population in Article 4 as:

all persons not belonging to one or other of the following categories: (a) members of the armed forces, or of their auxiliary or complementary organisations;

¹⁶ John Risley, *The Law of War* (Innes and Co. 1897) at 107-108.

¹⁷ Comprising Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949 (hereinafter Geneva Convention I or GCI) 75 *UNTS* 31 (1950); Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949 (hereinafter Geneva Convention II or GCII) 75 *UNTS* 85 (1950); Geneva Convention Relative to the Treatment of Prisoners of War of 12 August 1949 (hereinafter Geneva Convention III, GCIII or the POW Convention) 75 *UNTS* 135 (1950); and Geneva Convention Relative to the Protection of Civilian Persons in Time of War of 12 August 1949 (hereinafter Geneva Convention IV, GCIV, or the Civilians Convention) 75 *UNTS* 287 (1950).

¹⁸ Despite no explicit inclusion of the term in the Conventions, Article 3 common to all four Conventions—also known as Common Article 3—did invoke the concept in stating its applicability to “persons taking no active part in the hostilities, including members of armed forces who had laid down their arms and those placed *hors de combat* . . .” That “active” and “direct” should be considered as one and the same has been affirmed by the International Criminal Tribunal for Rwanda, where the Court stated “these phrases are so similar that, for the Chamber’s purposes, they may be treated as synonymous[.]” See *Prosecutor v Jean-Paul Akayesu*, Case No. ICTR 96-4-T, Judgment, § 629 (2 September 1998).

¹⁹ Article 1, Draft Rules.

(b) persons who do not belong to the forces referred to above, but nevertheless take part in the fighting.²⁰

The concept of direct participation in hostilities was finally expressly codified in the 1977 Additional Protocols.²¹ In Protocol I, DPH is outlined in Article 51(3) providing that “civilians shall enjoy the protection afforded by this Section, unless and for such time as they take a direct part in hostilities.”²² Article 51(3) has had no reservations to date.²³ Indeed, the importance of the provision was affirmed by a number of States,²⁴ including the United Kingdom, who declared the exception to the civilian immunity from attack contained in Article 51(3) a “valuable reaffirmation” of an existing rule of customary international law.²⁵ DPH is outlined in Article 13(3) of Protocol II, and is worded similarly to Article 51(3) of Protocol I.

²⁰ This was echoed in Resolution XXVIII, from the 1965 International Conference of the Red Cross, which reaffirmed need for all parties to the conflict to distinguish between persons taking part in hostilities, and the civilian population.

²¹ The Additional Protocols comprise Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts of 8 June 1977, 1125 *UNTS* 3, and Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts of 8 June 1977, 1125 *UNTS* 609. See Y. Sandoz, C. Swinarski and B. Zimmerman (eds.), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (ICRC, 1987) at xix-xxxi (hereinafter *AP Commentary*).

²² The “protection afforded by this Section” refers to the prohibition contained in Article 51(1), (2), (4)-(8) – which provide that civilians are not to be made the subject of attack, and that civilians are to be protected from the dangers arising from military operations, imposing prohibitions on parties to the conflict on conducting indiscriminate attacks, and from using civilians to immunise military installations or sites.

²³ Additional Protocol I, Article 51(3) (adopted by 77 votes in favour, one against and 16 abstentions).

²⁴ See Official Records of the Diplomatic Conferences, Vol. VI, CDDH/SR.41, 164-204, §§ 119-181.

²⁵ Official Records, Vol. VI, CDDH/SR.41, 164, § 119. The importance of this provision was affirmed in the Rome Statute of the International Criminal Court, which criminalises attacks on civilians “not taking direct part in hostilities” under Article 8(2)(b)(i), (e)(i); UN Doc. A/CONF.183/9, 37 ILM 1002 (17 July 1998).

III. DEFINING DIRECT PARTICIPATION IN HOSTILITIES

When debating Article 51 of Protocol I, states did not settle on a precise definition of what was meant by the phrase “direct part in hostilities.”²⁶ The Commentary to the Additional Protocols states that:

The immunity afforded individual civilians is subject to an overriding condition, namely, on their abstaining from all hostile acts. Hostile acts should be understood to be acts which by their nature and purpose are intended to cause actual harm to the personnel and equipment of the armed forces.²⁷

While this commentary provides some insight, a number of issues remain. For instance, what constitutes “hostilities”? Is there a specific threshold? How does one determine the scope of “direct part” or “unless and for such time”? Given the definitional ambiguities, it is unsurprising that it was stated in the ICRC Study on the customary status of international humanitarian law that “a precise definition of the term ‘direct participation in hostilities’ does not exist.”²⁸ It was with this fact in mind that the ICRC instigated a study into the concept of “direct participation in hostilities.” Conducted over the period of five years, the project included questionnaires, reports, background papers, and expert meetings. The final result of this study was the publication of the Interpretive Guidance on Direct Participation in Hostilities in 2009, which is discussed in more detail below.

At this same time, the Israeli Supreme Court also had occasion to examine the question of DPH, in the 2006 case *The Public Committee Against Torture in Israel v The Government of Israel*, known as the

²⁶ See the Additional Protocols Official Records XV at 330, CDDH/III/224; see also *AP Commentary* at 618-619, paragraphs 1942-1945; M. Bothe, K.J. Partsch and W. Solf, *New Rules for Victims of Armed Conflicts: Commentary on the Two 1977 Protocols Additional to the Geneva Conventions of 1949* (Martinus Nijhoff, 1982) at 301-304, paragraphs 2.4 – 2.4.2.2 (hereinafter *New Rules*).

²⁷ *AP Commentary* at 618, par. 1942.

²⁸ Jean Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, 2 volumes, Vol. I Rules, Vol. II Practice (2 parts), (ICRC, Geneva, 2005), Vol. I, at 22 (hereinafter referred to as *ICRC CIHL Study*).

“Targeted Killings” case.²⁹ The Court examined, amongst other issues, the scope of Article 51(3) of Protocol I regarding direct participation.

First, the Court affirmed the customary status of the principle behind Article 51(3), an important step as Israel is not party to Additional Protocol I.³⁰ The Court then analyzed the concept of DPH, for the purposes of determining when a civilian was deemed to lose his or her immunity from targeting. The Court took a functional approach,³¹ mindful of being neither too narrow nor too broad. In this respect, the Court noted the ICRC’s Commentary on the Additional Protocols which stated that, in determining the scope of direct participation:

undoubtedly there is room here for some margin of judgment: to restrict this concept to combat and active military operations would be too narrow, while extending it to the entire war effort would be too broad, as in modern warfare the whole population participates in the war effort to some extent, albeit indirectly.³²

The Court thus identified certain categories of persons who could be considered as taking direct part in hostilities. These included (a) persons collecting intelligence on the armed forces; (b) persons transporting unlawful combatants to or from the place where hostilities are occurring; and (c) persons who operate weapons that unlawful combatants use, or supervise their operation, or provide service to them.³³ The Court also considered civilians involved in transporting ammunition to places for use in hostilities, as well as persons acting as voluntary human shields should be considered as taking direct part in hostilities.³⁴ The Court explained:

²⁹ *The Public Committee Against Torture in Israel v The Government of Israel* (2006) HCJ 769/02; hereinafter the *Targeted Killings* case.

³⁰ *Targeted Killings* case, §§ 23, 29-30.

³¹ *Ibid.*, § 31.

³² *AP Commentary* at 516, par. 1679.

³³ *Targeted Killings*, § 35.

³⁴ *Ibid.*, §§ 35, 36.

[the] direct character of the part taken should not be narrowed merely to the person committing the physical act of attack, those who have sent him, as well, take ‘a direct part’. The same goes for the person who decided upon the act, and the person who planned it. It is not to be said about them that they are taking an indirect part in hostilities.³⁵

Excluded, however, were certain persons and acts from the scope of DPH, including selling food and medicine to unlawful combatants; providing general strategic analysis, logistical, and other general support, including monetary aid; and distributing propaganda.³⁶

Also examined was the question of duration of DPH—when civilian immunity could be lost and when (and if) it was regained. The Court stated that there was no accepted or agreed interpretation,³⁷ but conceded that a person who has ceased taking a direct part in hostilities regains his or her protection from targeting.³⁸ The Court noted that it was necessary to draw the distinction between a person who may take sporadic part, even if such participation was only a single instance, and those persons who have actively joined a “terrorist organization” and while within that organization, commit a chain of hostile acts, even if there are short “rest” periods between acts.³⁹ The Court noted that for a member of an organization, such rest intervals did not constitute a cessation of active participation, but rather a brief interlude preparatory to the commission of and participation in the next hostile act.⁴⁰

The Court determined that decisions regarding whether a civilian could be targeted for taking direct part in hostilities needed to be undertaken on a case-by-case basis;⁴¹ this methodology mirrors the approach of States and other judicial bodies in their assessment of the

³⁵ Ibid., ¶37.

³⁶ Ibid., ¶35.

³⁷ Ibid., ¶39.

³⁸ Ibid.

³⁹ Ibid., ¶¶ 39–40.

⁴⁰ Ibid.

⁴¹ Ibid., ¶¶ 34, 39.

scope of direct participation in hostilities. U.S. and Australian military manuals both cite the need for “case-by-case” analysis of DPH.⁴² The Court did not go into detail regarding the criteria for membership of a terrorist group or assumption of combat function. In contrast, the ICRC’s examination of DPH did go into such detail.

A. The ICRC’s Interpretive Guidance on DPH

The Interpretive Guidance⁴³ issued by the ICRC focused on three questions: (1) who is a civilian for the purposes of the principle of distinction? (2) what conduct amounts to direct participation in hostilities? and (3) what modalities govern the loss of protection against direct attack?⁴⁴ The Guidance defines civilians as “all persons who are neither members of the armed forces of a party to the conflict nor participants in a *levée en masse*.”⁴⁵ Such persons are “entitled to protection against direct attack unless and for such time as they take a direct part in hostilities.”⁴⁶ This definition is essentially straightforward in relation to civilians in international armed conflicts.

⁴² The U.S. *Commander’s Handbook on the Law of Naval Operations* states that, “[d]irect participation in hostilities must be judged on a case-by-case basis. Some examples include taking up arms or otherwise trying to kill, injure, or capture enemy personnel or destroy enemy property. Also civilians serving as lookouts or guards, or intelligence agents for military forces may be considered to be directly participating in hostilities.” The U.S. Naval War College, “The Commander’s Handbook on the Law of Naval Operations,” http://www.usnwc.edu/getattachment/a9b8e92d-2c8d-4779-9925-0defea93325c/1-14M_%28Jul_2007%29_%28NWP%29 (accessed October 15, 2012); the Australian manual states “[c]ivilians are only protected as long as they refrain from taking a direct part in hostilities. Whether or not a civilian is involved in hostilities is a difficult question, which must be determined by the facts of each individual case. Civilians bearing arms and taking part in military operations are clearly taking part in hostilities; civilians working in a store on a military air base may not necessarily be taking such a direct part.” Australian Defense Force, *Law of Armed Conflict*, (May 2006), Ch. 5.36.

⁴³ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, Adopted by the Assembly of the International Committee of the Red Cross on 26 February 2009, published in 90 *IRRC* 991 (2008) (hereinafter DPHIG).

⁴⁴ *Ibid.*, 994.

⁴⁵ *Ibid.*, 997.

⁴⁶ *Ibid.*

It becomes more complicated when one looks at how to define a civilian in a non-international armed conflict. The instruments that deal with non-international armed conflict—Common Article 3 and Protocol II—acknowledge but do not authorize participation in armed conflict. Thus, there is no clear distinction between combatant and civilian amongst non-State actors engaged in a non-international armed conflict. The Interpretive Guidance on participation in non-international armed conflict is accordingly more complex than that for international armed conflict:

All persons who are not members of State armed forces or organised armed groups of a party to the conflict are civilians and, therefore, entitled to protection against direct attack unless and for such time as they take a direct part in hostilities. In non-international armed conflict, armed groups constitute the armed forces of a non-State party to the conflict and consist only of individuals whose continuous function is to take a direct part in hostilities (“continuous combat function”).⁴⁷

The concept of “continuous combat function” was adopted to exclude support personnel from the definition of persons taking direct part in hostilities, unless they actually take direct part in addition to their support roles.

Exactly what constitutes direct participation in hostilities is defined by the Interpretive Guidance as a specific act that meets three cumulative criteria:

(1) the act must be likely to adversely affect the military operations or military capacity of a party to an armed conflict or alternatively to inflict death, injury, or destruction on persons or objects protected against direct attack (threshold of harm); (2) there must be a direct causal link between the act and the harm likely to result from that act, or from a coordinated military operation of which that act constitutes an integral part (direct causation); and (3) the act must be specifically designed to directly cause the required threshold of

⁴⁷ Ibid., 1002.

harm in support of a party to the conflict and to the detriment of another (belligerent nexus).⁴⁸

Again, these constitutive elements are designed to ensure that persons who might supply subsidiary or tangential support—such as essentially administrative or support functions—are excluded from targeting.

Finally, the remaining part of the overall test is that of “modalities governing loss of protection.” The Guidance states that civilians directly participating will lose their protected status for the duration of each act of direct participation. Higher-level members of organized groups do not have this “revolving door” of protection and loss of protection. As long as such persons are deemed to be assuming a continuous combat function, they will remain targets.⁴⁹ This loss of protection for individual acts includes a temporal element—“measures preparatory to the execution of a specific act of direct participation in hostilities, as well as the deployment to and the return from the location of its execution, constitute an integral part of that act.”⁵⁰ Thus, travel to and return from an act of DPH is included in the window for loss of protection.

As of this writing, the ICRC Interpretive Guidance remains the most recent attempt to define the concept of direct participation in hostilities. While the Interpretive Guidance has been the subject of some criticism,⁵¹ it is nonetheless a valuable tool in the on-going debate regarding the scope of the concept of “direct participation in hostilities.” With this extant debate in mind, the next section analyzes the idea of direct participation in the context of cyber hostilities.

⁴⁸ Ibid., 1016.

⁴⁹ Ibid., 1034–35.

⁵⁰ Ibid., 1031.

⁵¹ See generally, W. Hays Parks, “Part IX of the ICRC ‘Direct Participation in Hostilities’ Study: No Mandate, No Expertise, and Legally Incorrect,” *New York University Journal of International Law* 42 (Spring 2010); Kenneth Watkin, “Opportunity Lost: Organized Armed Groups and the ICRC ‘Direct Participation in Hostilities Interpretive Guidance,’” *New York University Journal of International Law* 42 (Spring 2010).

IV. DIRECT PARTICIPATION IN CYBER HOSTILITIES

As noted in the *Targeted Killings* case, “it is possible to take part in hostilities without using weapons at all.”⁵² Thus, while the means of warfare may be profoundly different in 2012 to those used in 1907, the effects of such means of warfare are essentially similar. A military communications system is rendered equally inoperative if it is disabled by a computer virus rather than a bombing raid. Indeed, computer network attacks (CNA)⁵³ and computer network exploitation (CNE)⁵⁴ were both discussed by the ICRC during the DPH process, leading to the assessment that “electronic interference with military computer networks could . . . suffice [as DPH], whether through computer network attacks (CNA) or computer network exploitation (CNE), as well as wiretapping the adversary’s high command or transmitting tactical targeting information for attack.”⁵⁵

It is therefore possible to conceive of examples of cyber-participation in hostilities. For the purposes of this next section of the paper, an “effects-based” approach regarding determining direct participation in hostilities is chosen; DPH will be assessed on the intended or actual effect produced by the act in question. This approach is supported by State practice and case law,⁵⁶ and is affirmed

⁵² *Targeted Killings*, ¶ 33.

⁵³ Defined as “operations to disrupt, dent, degrade, or destroy information resident in computers and computer networks, or the computer and networks themselves.” Jean-François Quéguiner, Background Paper, *Direct Participation in Hostilities under International Humanitarian Law*, International Committee of the Red Cross, (Geneva: ICRC, 2003) <http://www.icrc.org/eng/assets/files/other/2003-02-background-document-icrc.pdf> 15.

⁵⁴ Defined as “the ability to gain access to information hosted on information systems and the ability to make use of the system itself.” *Ibid.*

⁵⁵ DPHIG, 1017–18.

⁵⁶ See, the ICTY in *Strugar*, where the Chamber defined DPH as “acts of war which by their nature or purpose are intended to cause actual harm to the personnel or equipment of the enemy’s armed forces.” *Prosecutor v. Strugar*, Case No. IT-01-42-A, International Criminal Tribunal for the Former Yugoslavia, (2008), ¶¶ 176-79. The Chamber drew on numerous sources in support of its statement, including military manuals from numerous countries, international tribunal judgments, U.S. Military Commission decisions, State practice and reports, and decisions of human rights bodies, such as the Inter-American Commission on Human Rights. See, Inter-American Commission on Human Rights, *Third Report on the Human Rights Situation in Columbia*, (1999), <http://www.cidh.org/countryrep/Colom99en/chapter.4a.htm> (accessed October 15, 2012), ch. 4 B.2.d.¶ 53. (“It is generally understood in humanitarian law that the phrase ‘direct participation in

by the ICRC in the Commentary to the Additional Protocols.⁵⁷ Additionally, due to the constraints of space, this section will focus on CNA/CNE conducted against clear military objectives, rather than attacks against quasi-military or governmental sites, such as state-run newspapers.

Elaborating on possible examples of direct participation, the ICTY noted

Examples of active or direct participation in hostilities include: bearing, using or taking up arms, taking part in military or hostile acts, activities, conduct or operations, armed fighting or combat, participating in attacks against enemy personnel, property or equipment, transmitting military information for the immediate use of a belligerent, transporting weapons in proximity to combat operations, and serving as guards, intelligence agents, lookouts, or observers on behalf of military forces.⁵⁸

Given such examples, a number of cyberwar scenarios can be theorized.

A. A Civilian Contracted by the Armed Forces or Other Party to the Conflict to Write Malicious Code or Otherwise Engage in CNA/CNE

This scenario is similar to the CIA practice of using civilians to pilot drones in targeted killing strikes,⁵⁹ or the employment of private military and security contractors (PMSCs) in places such as Afghanistan and Iraq.⁶⁰ The ICRC Interpretive Guidance specifically

hostilities' means acts which, by their nature or purpose, are intended to cause actual harm to enemy personnel and material.").

⁵⁷ *AP Commentary*, 618.

⁵⁸ *Strugar*, 176–179.

⁵⁹ See, David S. Cloud, "Combat by Camera: Civilian Contractors Playing Key Roles in U.S. Drone Operations," *The Los Angeles Times*, December 30, 2011.

⁶⁰ See, Peter W. Singer, *Can't Win With 'Em, Can't Got to War Without 'Em: Private Military Contractors and Counterinsurgency*, in the Brookings Institute Foreign Policy Paper Series, <http://www.brookings.edu/~media/research/files/papers/2007/9/27militarycontractors/0927militarycontractors>.

addresses the issue of PMSCs, civilian employees and DPH in international armed conflict, stating that:

as long as they are not incorporated into the armed forces, private contractors and civilian employees do not cease to be civilians simply because they accompany the armed forces and or assume functions other than the conduct of hostilities that would traditionally have been performed by military personnel A different conclusion must be reached for contractors and employees who, to all intent and purposes, have been incorporated into the armed forces of a party to the conflict, whether through a formal procedure under national law or *de facto* by being given a continuous combat function [S]uch personnel would be members of an organised armed force, group or unit under a command responsible to a party to the conflict and . . . would no longer qualify as civilians.⁶¹

Thus, while civilians employed to generally maintain computer networks for an armed force (in the capacity of general IT services such as email, websites, etc.) would likely not be considered as taking direct part in cyber hostilities, any employee or contractor who was specifically employed to conduct hostile CNA/CNE would, in theory, be considered as taking direct part in hostilities.

B. A Civilian Unilaterally Engaging in CNA/CNE for the Purposes of Disrupting Networks and Gathering Information

This example is based on specific behavior that occurred during the cyber-attacks against Georgia in 2008. Russian websites and blogs posted instructions on how to set up computers to automatically run

⁶¹ The Guidance goes on to note that the statements regarding PMSCs and civilian employees in international armed conflicts “also apply, *mutatis mutandis*, in non-international armed conflicts.” DPHIG, 1010–11.

distributed denial of service attacks (DDoS),⁶² some even offering downloadable DDoS programs.⁶³

As such, civilians unilaterally engaging in hostile cyber-attacks, without being specifically instructed by or answerable to a party to conflict, would likely fulfill the criteria for DPH. Any acts undertaken by such persons, with the intent or effect of rendering the targeted networks vulnerable or inoperative, have directly participated in the same way as if they were conducting a “traditional” kinetic attack to damage or destroy a military base or airfield.

C. A Civilian Who Writes the Malware Program and Gives It to the Armed Forces or Other Party to the Conflict, but Does Not Personally Execute the Malware

The ICRC Guidance seems to suggest that such acts—by someone who creates the mechanism through which a destructive act is executed, but is not involved beyond the construction phase—would *not* amount to direct participation, in that the “causation” test would not be met. The Guidance states:

individual conduct that merely builds up or maintains the capacity of a party to harm its adversary . . . is excluded from the concept of direct participation in hostilities [Examples of non-DPH] include scientific research and design, as well as production and transport of weapons and equipment.⁶⁴

However, the experts involved in the DPH process were “divided”⁶⁵ as to whether civilian scientists and weapons experts could always be considered as not taking direct part. For instance, some were of the opinion that constructing improvised explosive devices

⁶² See, Evgeny Morozov, “An Army of Ones and Zeroes: How I Became a Soldier in the Georgia-Russia Cyber War,” *Slate*, August 14, 2008, http://www.slate.com/articles/technology/technology/2008/08/an_army_of_ones_and_zeroes.html.

⁶³ *Ibid.*; see also, Asher Moses, “Georgian Websites Forced Offline in Cyber War,” *The Sydney Morning Herald*, August 12, 2008, <http://www.smh.com.au/news/technology/georgian-websites-forced-offline-in-cyber-war/2008/08/12/1218306848654.html>.

⁶⁴ DPHIG, 1021-22.

⁶⁵ International Committee of the Red Cross, Summary Report, *Fourth Expert Meeting on the Notion of Direct Participation in Hostilities*, (Geneva, 2008) 48.

could be considered as exceeding mere capacity-building and amount to a measure “preparatory to a concrete military operation.”⁶⁶ In theory, one would therefore treat such programmers as civilians not taking direct part, so long as they are not directly involved in executing the program themselves.

D. A Civilian Who Writes or Deploys Malware for Criminal Purposes or for the Purposes of Creating Mischief, but Who Has No Specific Nexus to the Hostilities

In some instances, systems are hacked simply for criminal, malicious, or mischievous reasons, with no nexus to the armed conflict; sites and networks are targeted simply because they can be.⁶⁷ In such a case, the appropriate response would lie with domestic law enforcement, rather than under the law of armed conflict.⁶⁸ However, persons engaged in CNA/CNE during an armed conflict would nonetheless put themselves at risk of being targeted, as their attacks would be difficult to differentiate from attacks being conducted by persons with a connection to the hostilities.

E. A Civilian Who Provides Technical Support for Someone Engaging in Cyber-Hostilities

Finally, one may consider whether the provision of technical or logistical support could amount to direct participation in hostilities. For example, it is possible now to outsource one’s personal IT support issues to corporations. Major companies, like the U.S. corporation Best Buy, offer remote and in-home IT assistance through subsidiaries like “Geek Squad.”⁶⁹ Thus, a civilian engaging in cyber-hostilities,

⁶⁶ Ibid., at 48–60.

⁶⁷ The vernacular term is “black hat hacker”—see for example, CNN.com, “Timeline: A Forty Year History of Hacking,” CNN Tech, http://articles.cnn.com/2001-11-19/tech/hack.history.idg_1_phone-phreaks-chaos-computer-club-emmanuel-goldstein?_s=PM:TECH.

⁶⁸ For example, the U.K. has specifically banned DDoS attacks under § 36 of the Police and Justice Act of 2006. The Police and Justice Act, 2006, § 36. <http://www.legislation.gov.uk/ukpga/2006/48/section/36>; see generally, Tom Espiner, “U.K. Outlaws Denial-of-Service Attacks,” Cnet, http://news.cnet.com/U.K.-outlaws-denial-of-service-attacks/2100-7348_3-6134472.html.

⁶⁹ See, The Geek Squad, “About Us,” <http://www.geeksquad.com/about-us>.

confronted with a sudden technical problem they were unable to personally solve, might solicit the help of an external contractor. Would such an external contractor be participating in hostilities? What if the person engaging in cyber-hostilities mentioned what they were doing to the contractor? Would that mean that the contractor was now directly participating in hostilities? Based on a reading of the ICRC DPH guidance, as well as the Israeli Supreme Court decision on direct participation for the purposes of targeted killing, it would seem that such technical support would be too remote to amount to direct participation. Even if such a technician was “on-board” with the idea of engaging in cyber-war, and encouraged the civilian participant to do as much damage as possible, it seems that the technician would still fail to fulfill all the cumulative criteria required for the DPH test. This was noted by Turns, who argues that the provision of technical support to someone engaged in cyber-war would likely be too remote for the purposes of causation and threshold of harm.⁷⁰ Indeed, even on-going and regular technical support provided by a contractor to the military would not amount to direct participation in cyber-hostilities because computer systems would need on-going maintenance. Computer maintenance would likely amount to “individual conduct that merely builds up or maintains the capacity of a party to harm its adversary . . . [and thus] is excluded from the concept of direct participation in hostilities.”⁷¹

V. CONCLUSIONS

It is hard to imagine any situation where a person involved in creating or deploying malware in an armed conflict situation could not be considered as taking direct part in hostilities. Malware is by definition designed to damage the target computer or computers. It would be difficult to argue that any person involved in the creation and execution of a malicious code was somehow unaware of the programs’ intent. Perhaps the only scenario that would fit into such a situation might be a courier, involved in physically transporting hardware (computers or USB sticks loaded with malware) from the programmer to the person or persons ultimately executing the malware.

⁷⁰ David Turns, “Cyber Warfare and the Notion of Direct Participation in Hostilities,” *Journal of Conflict & Security Law* 17 (2012): 295.

⁷¹ DPHIG, 1021.

However, any response to a CNA/CNE would need to be proportionate to the initial attack. A CNA/CNE that crashed purely commercial websites would arguably not justify an armed response. Where no physical casualties result, a proportionate response to a CNA/CNE would likely be limited to a counter-CNA/CNE against hacker computers and networks. This, of course, raises additional problems with regards to how, and against whom, an appropriate response can be directed. DPH in any kind of hostilities remains a dangerous endeavor; the uncertainties in both law and practice in cyber hostilities make such participation especially problematic. The recent publication, in draft form, of the Tallinn Manual on the International Law Applicable to Cyber Warfare, has provided some guidance on this question of direct participation in cyber hostilities.⁷² At the time of writing of this article, a detailed analysis of the Tallinn Manual has not been undertaken. The drafters of the Manual have thus begun the important and complex process of clarifying the situation, so that civilians and the military may better know the parameters in which we operate in this new “cybered” realm.

⁷² See, NATO Cooperative Cyber Defense Centre of Excellence, draft, *Tallinn Manual on The International Law Applicable to Cyber Warfare*, Michael N. Schmitt ed., (Cambridge, 2013), 83–91, <https://www.ccdcoe.org/249.html>.

